Public Service Commission of Wisconsin
Rebuttal Testimony of Mitchell Horrie
Division of Digital Access, Consumer and Environmental Affairs

Docket 5-CG-106
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Q. Please state your name, business address, and occupation.

A. My name is Mitchell (Mitch) Horrie. My business address is Public Service Commission of Wisconsin (Commission), 4822 Madison Yards Way, Madison, Wisconsin 53707. I am the Focus on Energy (Focus) Performance Manager in the Commission's Division of Digital Access, Consumer, and Environmental Affairs.

Q. What is your background?

A. I hold a Bachelor of Science degree in Geography from Illinois State University and Master's Degree in Geography and Environmental Resources from Southern Illinois University. I have been in my current role of Focus Performance Manager since September 2019.

Q. What are your work responsibilities?

A. As the Focus Performance Manager, I lead the Commission's analysis and oversight of the evaluation, market research, and measurement and verification for the energy efficiency and renewable resource programs that make up Focus. I also manage the Commission's contract with the Focus third-party evaluator. The Focus third-party evaluator conducted the 2016 Potential Study and is currently conducting an update of that study (2021 Potential Study). Additionally, I am the lead staff at the Commission overseeing voluntary utility energy efficiency programs, utility administered programs and large customer self-directed programs provided for under Act 141.

Q. What is the purpose of your rebuttal?

A. The purpose of my rebuttal is to provide comments on the analysis of demand-side alternatives presented in Ex.-Direct-SC-Hopkins.

Q. Are you sponsoring any exhibits to your testimony?

A. Yes. I am sponsoring Ex.-PSC-Horrie-1r, Ex.-PSC-Horrie-2r, Ex.-PSC-Horrie-3, and Ex.-PSC-Horrie-4. Ex.-PSC-Horrie-1r is a Commission Final Decision from September 5, 2014, setting the goals, priorities, and measurable targets for the statewide energy efficiency and renewable resource program's quadrennial planning period of 2015-2018. Ex.-PSC-Horrie-2r is a Commission Order from December 23, 2015, establishing the value of avoided carbon dioxide emissions for the purposes of assessing the cost-effectiveness of Focus. Ex.-PSC-Horrie-3 is a Commission Order from February 26, 2015 establishing a method for calculating avoided energy costs of natural gas for the purposes of assessing the cost-effectiveness of Focus. Ex.-PSC-Horrie-4 is an excerpt from the 2021 Iowa Technical Reference Manual (TRM).

Q. The testimony in Ex.-Direct-SC-Hopkins relies on the 2016 Potential Study to demonstrate untapped cost-effective energy efficiency potential. Is this study appropriate for the purposes of the analysis in that testimony?

A. In general, the 2016 Potential Study, as cited in Ex.-SC-Hopkins-18, is a reasonable source of data and information for the analysis presented in the testimony. However, certain considerations related to the assumptions used in the demand-side alternatives analysis presented in Ex.-Direct-SC-Hopkins and the appropriateness of applying certain 2016 Potential Study results for the purposes of the analysis are worth noting. The issues I am addressing are sequenced in the series of questions below as: 1) the appropriateness of the 2016 Potential Study for estimating peak natural gas demand savings potential, 2)

the consideration of multiple study modeling scenarios, 3) translation of 2016 Potential Study results to program potential savings, and 4) considerations pertaining to the description of the 2016 Potential Study's measure-level costs and benefits as depicted in Ex.-Direct-SC-Hopkins. My rebuttal also discusses draft results from the 2021 Potential Study currently underway that are relevant to the testimony in Ex.-Direct-SC-Hopkins.

Q. What considerations should be noted with respect to the use of the 2016 Potential Study to estimate peak natural gas demand savings potential?

A. As a foundational consideration, it is worth noting that the Commission has not set savings goals or targets for Focus to reduce peak gas demand in the current quadrennial period or past quadrennial periods. Accordingly, programs and technologies offered by Focus have generally not targeted achievement of peak gas savings. Detailed accounting of the costs and benefits of peak gas demand reductions has not aligned with Commission priorities. Focus does not quantify the savings impacts of program activities on peak gas demand. The Wisconsin TRM does not include measure-level algorithms and peak gas coincidence factors that would allow for the calculation of peak gas savings for measures implemented through Focus. Consequently, neither the 2016 Potential Study nor the 2021 Potential Study, which is currently underway, estimate natural gas peak savings potential. This consideration introduces uncertainty with respect to the impact of current efficiency programs as well as the impact of potential cost-effective annual natural gas savings on peak period demand reductions.

The testimony in Ex.-Direct-SC-Hopkins assumes that the space heating portion of available cost-effective energy efficiency potential is an appropriate proxy for measures that would address winter peak demand. This assumption is reasonable. However, the

2016 Potential Study estimates natural gas savings potential on an annual basis and does not translate those savings into peak gas demand. Applying the annualized rate of savings to the winter peak demand as is described in Ex.-Direct-SC-Hopkins is more likely to underestimate the impact of achievable space heating potential on peak demand reductions than it is to overestimate the impact.

As is the case with electric peaks and cooling usage, utility gas peak periods coincide with gas heating peak periods. This means that space heating usage is higher during utility gas peak periods than outside of those peaks. As an illustration, if a high efficiency furnace saves 365 therms per year, and the furnace were used at a steady rate throughout the year, there would be one therm saved per day or 0.274 percent per day (1/365). Space heating measures of course do not operate at a steady rate throughout the year. Their use is concentrated in the heating season. If it is assumed the heating season runs for six months, the savings in the example above doubles to two therms per day or 0.548 percent (2/365) per day. It is also likely that there is more space heating in the coldest months than in the shoulder months of the heating season, and more heating during the peak period than during other times of the heating season. Each of these steps increases the therm savings per day, as we approach the actual therm savings per day during the peak period itself. As mentioned above, the Wisconsin TRM does not include measure-level algorithms or peak gas coincidence factors that would allow for the calculation of peak gas savings for measures implemented through Focus. The 2021 Iowa Technical Reference Manual (Ex.-PSC-Horrie-4), which may be a reasonable proxy for Wisconsin, uses a peak day coincidence factor for space heating measures. As one example, the 2021 Iowa TRM uses a peak day gas coincidence factor of 1.6525 percent

for residential space heating. This factor is three times higher than the six month heating season example of 0.548 percent per day above. Thus, an approach that applies the annualized savings rate for space heating potential to the winter peak demand may be conservative.

Q. Ex.-Direct-SC-Hopkins uses the 2016 Potential Study's High Incentive Achievable Potential scenario as the basis for the demand-side alternative analysis. Does the 2016 Potential Study present results from other scenarios?

A. Yes, the 2016 Potential Study shows a significant range of available cost-effective savings potential over the 2019 to 2030 period, with program funding being a notable limiting factor in achieving those savings. The 2016 Potential Study models a Business As Usual Achievable Potential scenario that assumes program investments pay 25 percent of the incremental cost of energy efficiency measures and applies an annual funding cap. Incentive levels at 25 percent of incremental measure costs most closely matched actual Focus incentive levels at the time the study was conducted. The Low Incentive Achievable Potential scenario assumes program investments pay 25 percent of the incremental cost of energy efficiency measures but does not apply an annual funding cap. The Moderate Incentive Achievable Potential scenario assumes program investments pay 50 percent of the incremental cost of energy efficiency measures without applying an annual funding cap. The High Incentive Achievable Potential scenario assumes program investments pay 75 percent of the incremental cost of energy efficiency measures without applying an annual funding cap. Finally, the Maximum Incentive Achievable Potential scenario assumes program investments pay 100 percent of the incremental cost of energy efficiency measures without applying an annual funding cap.

Each scenario identified above, other than the Business as Usual scenario, models an accelerated adoption of energy efficiency measures compared to current program conditions. Reducing the incremental cost borne by the customer to purchase and install the energy saving technology and increasing program funding available to pay for those incentives allows for additional energy efficiency savings to be attained sooner. Other achievable potential scenarios may also be reasonable to consider for analysis purposes.

Q. Does the 2016 Potential Study attempt to account for program savings potential? If not, what considerations are appropriate for translating 2016 Potential Study results into program savings potential?

A. No, the 2016 Potential Study does not attempt to translate the estimates of cost-effective savings into program potential. Program potential refers to savings that could reasonably be achieved when accounting for a host of program implementation barriers which may include program design and delivery, available workforce, and spending limitations to name a few. The 2016 Potential Study notes that accounting for these barriers may result in higher or lower program potential, but that those estimates fall outside of the study's scope.

One key factor to note concerning program potential savings is that the 2016 Potential Study did not adjust measure-level cost-effectiveness to account for net savings attribution. Wis. Admin. Code § 137.05(12) requires the statewide program administrator deliver programs that pass a portfolio level test of net cost-effectiveness. Net savings are savings that would not have occurred in the absence of a given program offering as determined by the program third-party evaluator. To determine net savings the evaluator deducts gross savings associated with freeriders and adds savings due to

spillover. Freeriders are participants who took part in an energy efficiency program but would have adopted the energy efficient measure in the program's absence. Spillover savings refers to the effect of a program to induce additional savings in the form of program participants adopting more energy saving products or practices after an initial program experience or non-participants adopting energy saving products or practices because of program influence. Typically, portfolio level net-to-gross savings ratios are less than one. During the 2015-2018 quadrennial period, the portfolio level MMBtu net-to-gross ratio was estimated at 0.70, meaning that for every MMBtu saved, 70 percent was achieved through the investment of ratepayer dollars into the program, while 30 percent of the savings would have otherwise occurred absent the program. An analysis that considers cost-effective potential for gross savings may overestimate program savings potential compared to an analysis that considers cost-effective potential for net savings.

Q. Do you have any items to note with respect to the depiction of 2016 Potential Study measure-level benefits and costs as presented in Ex.-Direct-SC-Hopkins?

A. Yes. On Ex.-Direct-SC-Hopkins-46 it is stated that the illustrative demand-side approach, which relies on results from the 2016 Potential Study, only include utility-system costs and benefits. This is not accurate. The modified Total Resource Cost (TRC) test used to measure cost-effectiveness for Focus includes utility benefits in the form of avoided energy costs and societal benefits in the form of reduced emissions. On the cost side of the equation, the modified TRC test includes program administration and technical and customer support costs as well as incremental costs to participants.

In its Order of September 5, 2014, the Commission established a modified TRC test that includes the value of emissions avoided through Focus programs including carbon dioxide, sulfur oxides, and nitrogen oxides for the purposes of evaluating cost-effectiveness during the 2015-2018 quadrennial period. (Ex.-PSC-Horrie-1r.) In its subsequent Order of December 23, 2015, the Commission determined that a value of avoided carbon emissions of $15 per ton should be used for the purposes of evaluating the Focus program during the 2015-2018 quadrennium. (Ex.-PSC-Horrie-2r.) The 2016 Potential Study uses a value of $15 per ton of avoided carbon emissions in its assessment of measure-level cost-effectiveness.

The assessment in Ex.-Direct-SC-Hopkins that the demand-side approach only includes utility-system costs and benefits more closely describes the Utility Administrator Cost Test (UAT). The UAT test measures the benefits and costs of the program as a resource option from the perspective of the utility.

Next, as noted on Ex.-Direct-SC-Hopkins-28, the 2016 Potential Study does not account for the avoided capacity benefits for natural gas measures. This is accurate. Ex.-Direct-SC-Hopkins-28 notes that this fact leads to a conservative assessment of cost-effective potential. This is a reasonable conclusion. All else equal, accounting for the benefits of avoided natural gas capacity in the modified TRC test would increase measure level cost-effectiveness. However, since no estimate exists which measures the benefits of avoided natural gas capacity, the impact of these benefits on cost-effectiveness is uncertain.

Q. Are there any preliminary findings from the 2021 Potential Study currently underway that are relevant to the demand-side analysis in Ex.-Direct-SC-Hopkins?

A. Yes. The testimony in Ex.-Direct-SC-Hopkins, citing Ex.-SC-Hopkins-19, the draft 2021 Potential Study results presentation from April 29, 2021, indicates that cost-effective potential for natural gas measures is less compared to the 2016 Potential Study, primarily due to lower cost of natural gas. This is an accurate assessment of the draft 2021 Potential Study results.

Avoided energy costs are the largest source of benefits under the modified TRC test. The Commission established a methodology for determining the avoided cost of natural gas for the purposes of evaluating Focus during Quad II of Focus. (Ex.-PSC-Horrie-3.) Avoided cost values used in the 2016 Potential Study were updated for evaluation of program cost-effectiveness in the 2019-2022 quadrennial period. These updated values are used for modeling natural gas measure level cost-effectiveness for the 2021 Potential Study. From the 2015-2018 quadrennial period to the 2019-2022 quadrennial period, natural gas avoided costs decreased by more than 30 percent. As a result, all-else equal, the same natural gas measure from the 2016 Potential Study will be less cost-effective in the 2021 Potential Study solely due to lower avoided natural gas costs. A more in-depth analysis would be required to understand how the updated avoided cost values impact economic savings potential in the utility service areas.

Q. Does this conclude your testimony?

A. Yes, it does.

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